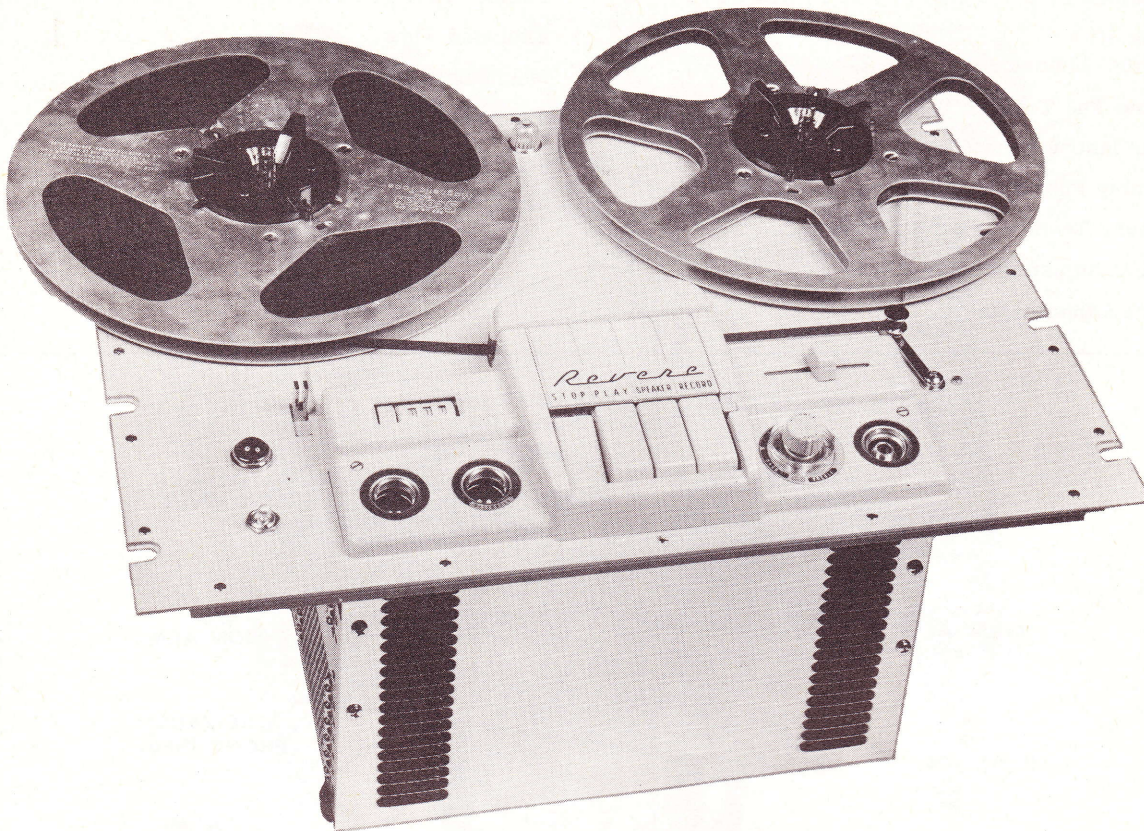


**REVERE
MODEL T11**



**REVERE
MODEL T11**

GENERAL INFORMATION

The "Revere" Model T-11 Tape Recorder features fingertip operation for Stop, Play, Speaker, and Record modes of operation merely by pressing a key. The "Revere" also incorporates a Rapid Forward-Rewind Lever, this lever is used to skip ahead to any point on the tape or to rewind tape onto the supply reel. This lever can be moved while the recorder is in any function and any previously depressed key will be automatically disengaged.

Two neon recording indicators simplify the recording lever setting. New recordings can be made on previously recorded tape since the erase head is automatically connected when the "Record" key is pressed or the same recording may be played back indefinitely.

This recorder is of the dual-track type, giving two full length recordings on a single reel of recording tape. Any size reel up to 10 1/2" can be used.

The "Revere" T-11 is designed to operate on 60 cycle, 105 to 120 volts, AC supply only.

Manufactured by:

Revere Camera Company
Chicago 16, Illinois

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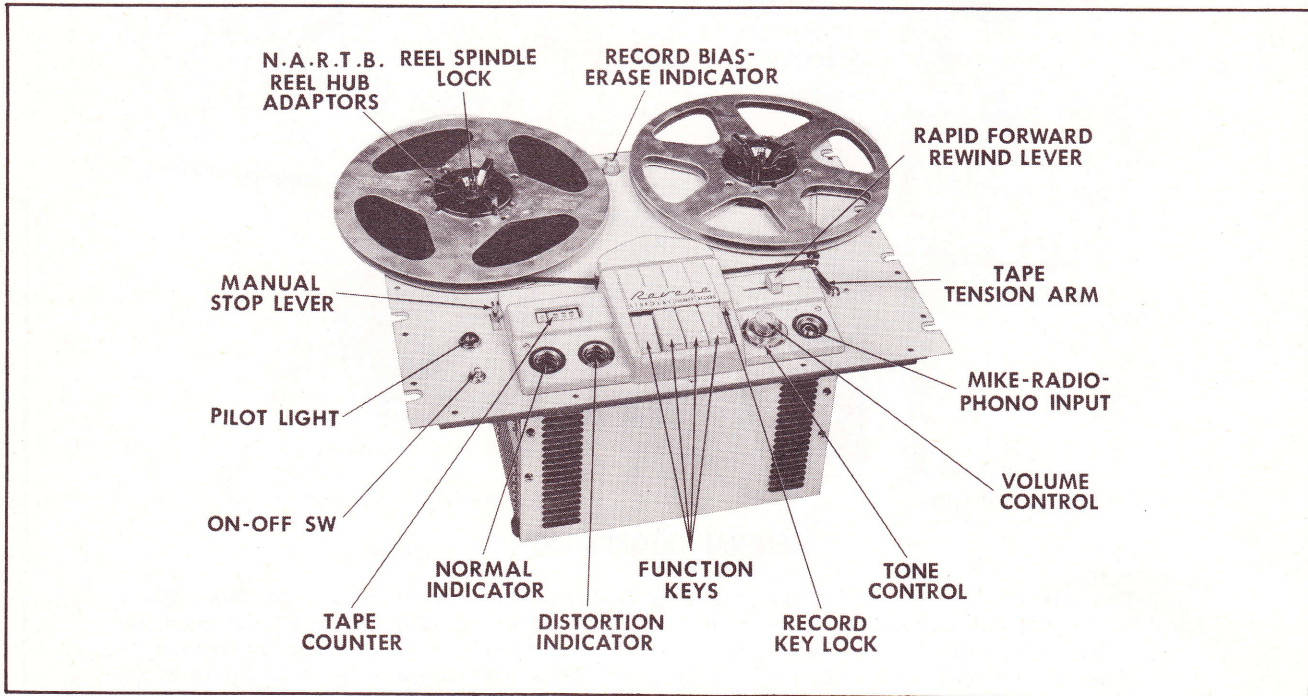


Figure 1

GENERAL DESCRIPTION

The Revere Model T-11 Tape Recorder features simplified fingertip operation for "Stop", "Play", "Speaker", and "Record". This unit is designed to record two tracks of material on standard width recording tape, which doubles the playing time of a reel of tape with no loss of frequency response or quality. Recordings can be made from a microphone, phono-

graph, AM-FM tuner, or from a television receiver. Recordings can be played through an existing home music system or through an efficient speaker by connecting it to the "Monitor Output" jack.

CAUTION: Do not use on direct current. Check name plate at rear of machine for proper current and voltage.

SPECIFICATIONS

Frequency Response — 40 to 16,000 cps, ± 3 db.

Tape Speed — 7 1/2 ips.

Signal To Noise Ratio — greater than 50 db.

Wow and Flutter — less than 0.2%.

Over-All Harmonic Distortion — 0.65%.

Over-All Intermodulation Distortion — less than 2.5%.

Size — top panel 19" x 14", depth 9" over-all.

Power Requirements — 105 to 120 volts, 60 cycles.
Power Consumption — 120 watts.

Weight of Recorder — 34 lbs.

Reel Size — up to 10 1/2".

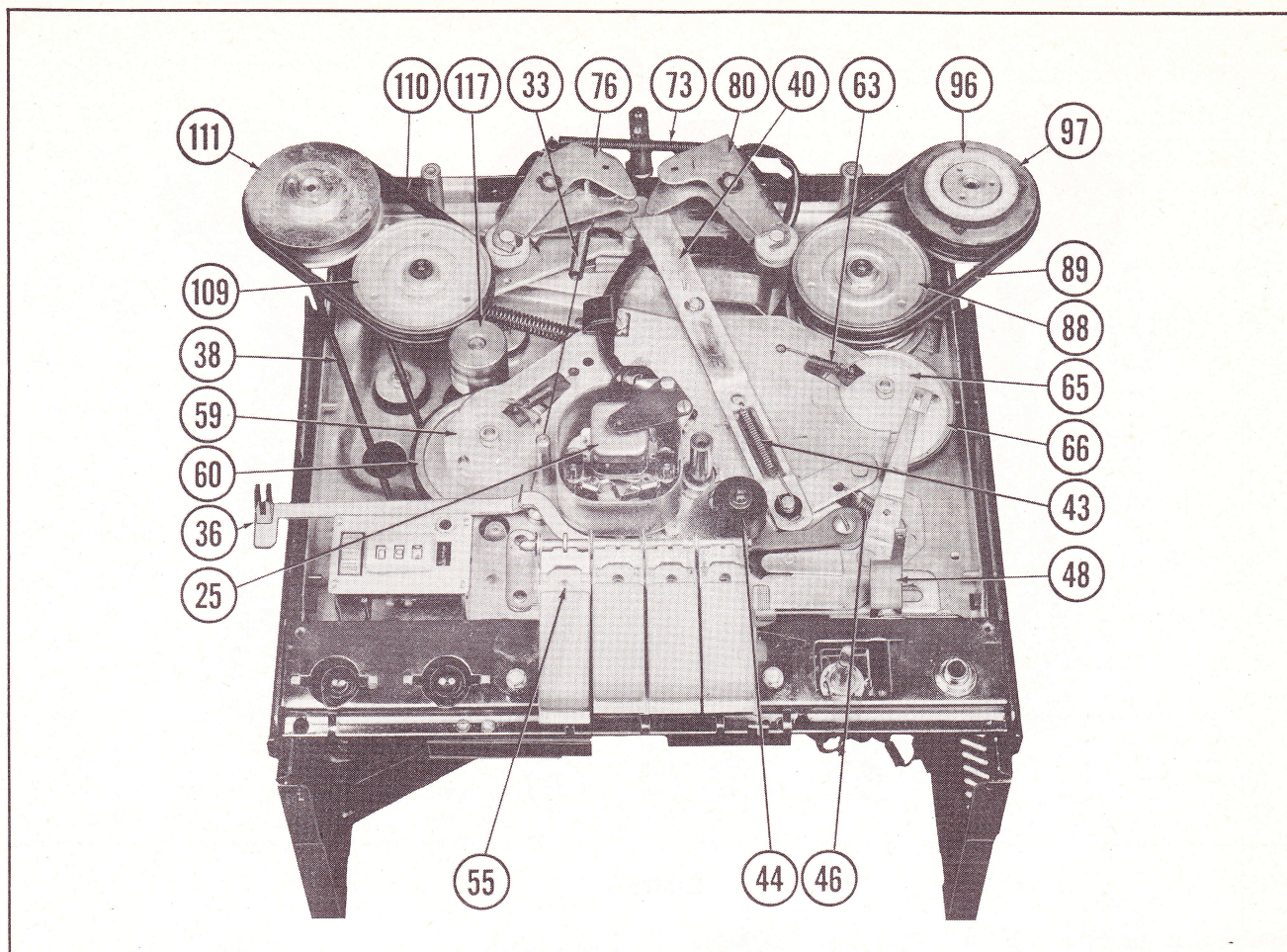


Figure 2

FUNCTIONS OF CONTROLS, INDICATORS, & SWITCHES

On-Off Switch

Moving this switch to the "On" position allows power to be supplied to the entire recorder.

Volume Control

This control regulates the volume when recording, and also when playing back through the Monitor Output. When playing through an external system connected from the Pre-amp Output jack, this control has no effect, and volume must be controlled at the external system.

Tone Control

This control is designed to give tonal extremes, and can be varied to produce a blend of tone suitable to any type of program. Whenever recordings are played back through an external system, this control should be placed in the "Hi-Fi" sector and then the tone control on the external system adjusted for the desired tonal blend. The tone control is switched out of the circuit when recording.

Function Keys

All electrical and mechanical functions for Play and Record operations are performed by the function

keys. Also, for convenience and protection, the mechanism is returned to the "Stop" position whenever the "Rapid-Forward Rewind Lever" is actuated.

Rapid Forward-Rewind Lever

This lever is used to skip ahead to any point on the tape or to rewind tape onto the supply reel. By moving this lever back and forth, the tape can be inched along in either direction to find an exact point on the tape. This lever can be moved while the recorder is in any function and any previously depressed key will be automatically disengaged.

Record Key Lock

This is a safety feature which locks the "Record" key to prevent accidental erasure. To actuate the "Record" key, the "Record Key lock" must be moved to the right before depressing the "Record" key.

Record Level Indicators

Adjust the volume so that the "Normal" indicator flashes and the "Distorted" indicator is on the verge of flashing on the loudest peaks. The indicators also light in "Play" and may be used to show relative playback

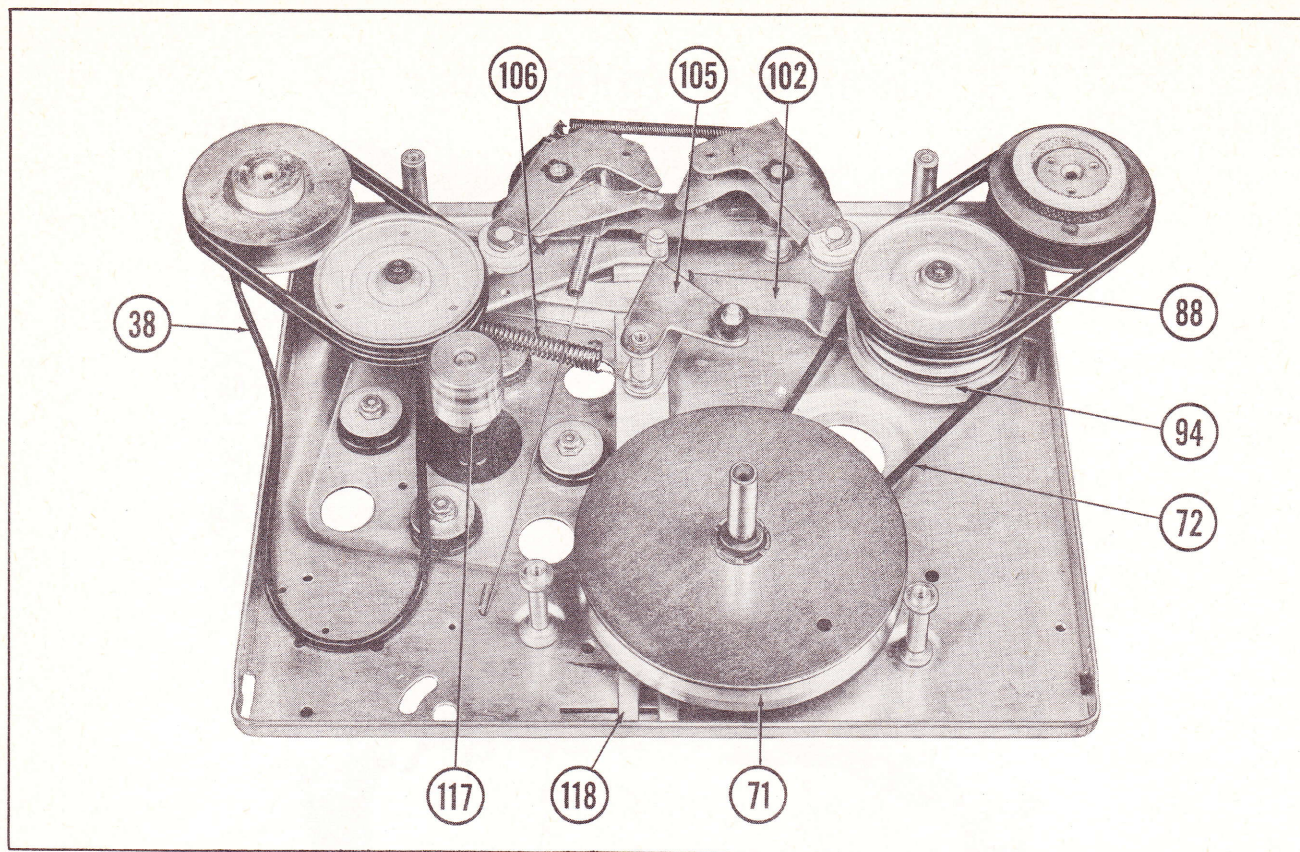


Figure 3

volume, but the "Normal" and "Distorted" markings apply only when recording.

Manual Stop Lever

This lever can be used to instantly stop the tape while in either "Play" or "Record" position. This enables precise setting of the record level before starting a recording, and also allows editing of unwanted breaks or commercials. In playback, this lever is useful for transcribing and editing.

Index Counter

Set the counter to zero after a reel of tape has been threaded on the recorder. After each selection is recorded, note the counter readings for future reference. In this way, the counter can be used to locate a pre-recorded selection on the tape.

Record Bias-Erase Indicator

The Bias-Erase indicator lamp, located between tape reels, lights showing that the oscillator is properly functioning.

CONNECTING THE T-11 TO HIGH FIDELITY SYSTEMS

1. Connect the recorder's "Pre-Amp. Output" to the Hi-Fi system's Pre-Amp. Input (Usually marked Tape, TV, or Auxiliary). Use standard phone plug and shielded cable. Shield must be soldered to the body terminal of each plug. The T-11 Pre-Amp. Output operates at a level of one volt into impedances of 25,000 ohms to two megohms.

2. Connect the recorder's Radio-Phono Input to the Hi-Fi System's Pre-Amplifier Output (a special output for tape recording may be provided, if not, make

connection across power amplifier input). Use standard phone plug with shielded wire. Radio-Phono Input is 1 megohm, operates on 0.05-10 volts (1 volt nominal) (-24VU to +22VU).

3. With the straight power cord, connect the recorder to an outlet supplying voltage and frequency as specified on the rear name plate. Switch controlled outlets of most systems can be used, in which case the whole system must be switched on to operate the recorder.

OPERATING INSTRUCTIONS

Threading The Tape

1. Place full reel of tape (glossy side out, i.e. "A" wind) on left reel lock assembly and empty reel on right reel lock assembly. If reels have the large

N.A.R.T.B. center hole, place the N.A.R.T.B. reel hub adaptors (1) on the reel lock assemblies (2), lift and turn the reel locks (5) until splines lock between the tiny raised dots on the hubs. Lock the large reels in place by turning the wings on the N.A.R.T.B. reel hub

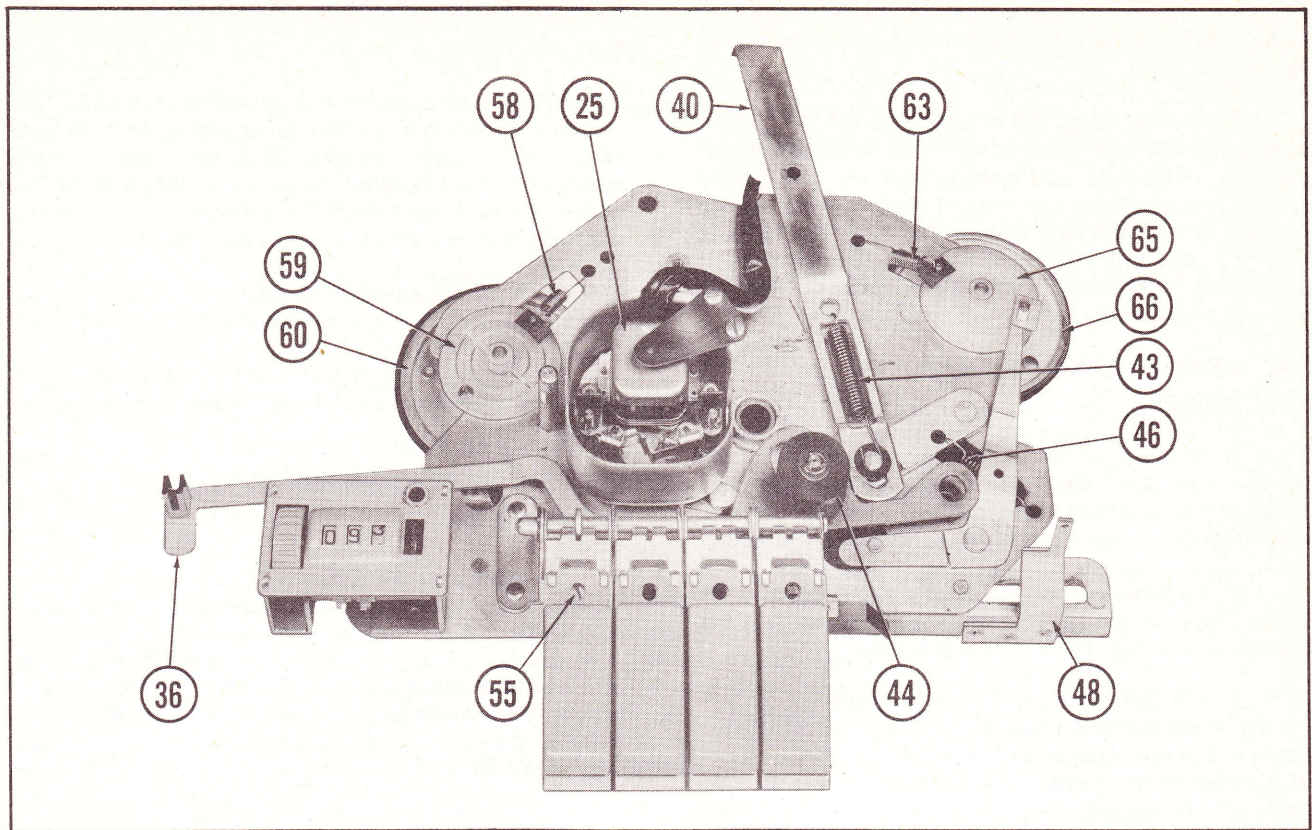


Figure 4

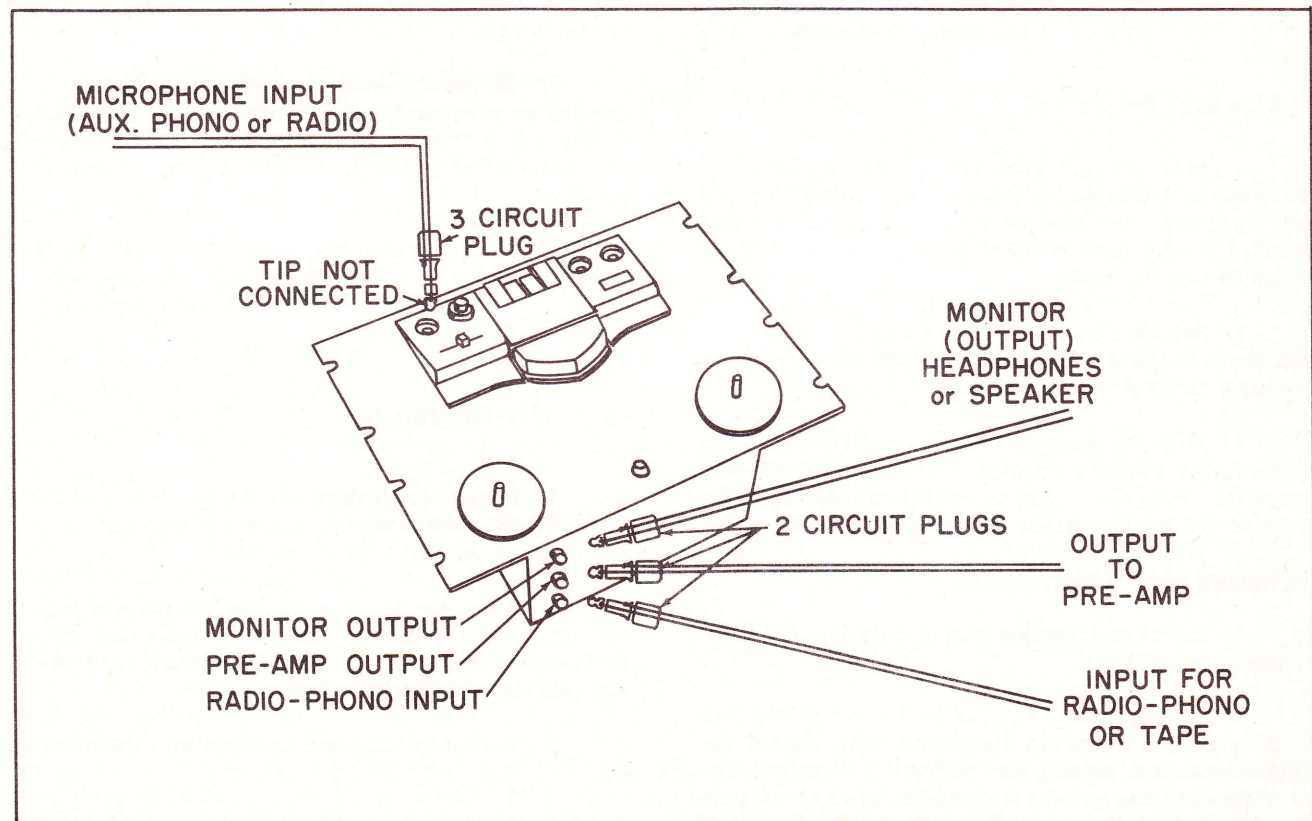


Figure 5. Input And Output Connections.

adaptors clockwise. Lock small reels by lifting reel locks (5) and turning the splines half way between the reel slots.

2. Unwind about 20" of tape from the reel. Hold a section of the tape straight with both hands and insert the tape in the tape slot making sure the dull coated side of the tape faces the rear of the recorder. Feed the tape around the tape tension arm (12), as shown in Figure 1, and into one of the slots in the empty reel. Rotate the reel counter-clockwise until the tape is secured to the reel.

How To Make A Recording From A Hi-Fi System

1. Play a program or phonograph record through the Hi-Fi system. Set its tone controls mid-way between treble and bass, switch off any loudness control, and adjust its volume control for comfortable listening.

2. Release record key lock by moving it to the right. Depress the record key while holding back the manual stop lever (36) with the left hand.

3. Set the recording level by adjusting the recorder's volume control so that the "Normal" indicator flashes and the "Distorted" indicator is on the verge of flashing on the loudest peaks. Release manual stop lever (36) to instantly begin recording.

NOTE: In most Hi-Fi systems using a separate control Pre-Amplifier and Power Amplifier, the Power Amplifier has a screwdriver adjustment labeled "Input Level". Reduce its setting, if the recorder volume control must be turned fully on to set the proper recording level, or if the Hi-Fi system is too loud at that point.

To Play Back Recordings

1. Move rewind knob (11) to the left (it automatically releases the record key and resets the record key lock) and wind tape back to the original counter setting. Return the rewind knob (11) to the center position to stop the reels.

2. Set the recorder "Tone Control" so that the red dot is in the Hi-Fi sector, and turn the recorder's "Volume Control" down.

3. Turn the selector switch of the Hi-Fi system to the Input Channel connected to the recorder, and press the "Play Key". Adjust the volume and tone controls of the Hi-Fi system for desired listening level.

To Record From A Microphone

1. Insert microphone plug firmly into the "Microphone Input".

2. Set the counter (37), slide the record key lock to the right, and depress the record key. Adjust the "Volume Control" so that the "Normal" indicator flashes while speaking into the microphone in a normal tone of voice. To monitor recording, plug headphones (any type) into "Monitor Output Jack", and press "Speaker" key.

To Play Recordings Through The T-11 Amplifier

The T-11 Recorder, without additional amplifiers, can be a "building block" for more elaborate future installations, and yet give gratifying performance in the meantime. The "Monitor Output Jack" can supply 2 1/2 watts at 3-4 ohms, which is sufficient for ordinary listening when an efficient speaker is used.

1. Connect an external speaker equipped with a standard phone plug into the "Monitor Output Jack".

2. Depress the "Play" and "Speaker" keys and adjust the "Volume" and "Tone" controls for desired listening level.

To Record Directly From AM-FM Tuner Or Phonograph

1. Connect the Tuner or Phonograph into the "Radio-Phono Input" on the rear panel, or to the "Microphone-Phono Input" on the front panel (both inputs are in parallel). To do this, attach a standard phone plug to a shielded cable and attach to the Tuner or Phonograph. The shield must be soldered to the body terminal of the plug. Low level magnetic cartridges such as G.E. or Pickering must operate through their pre-amplifiers.

2. Connect the speaker voice coil terminals to the "Monitor Output Jack" on the rear panel. To do this, attach a standard phone plug using #18 lampcord to the speaker, or use the gray attachment cord which is furnished with the unit. Polarity is not important.

3. Depress the speaker key and turn up the recorder's volume control to hear the program.

4. Thread the recorder and proceed with the recording as previously described under "How To Make A Recording From A Hi-Fi System". Press speaker key again after pressing record key to monitor recordings.

5. To play recording, rewind the tape to the original counter setting. Press play key and adjust recorder's "Volume" and "Tone" controls for desired listening level.

Twin Track Recording

1. Revere Recorders are designed so that each reel of tape holds two full length recordings, one on each half of the dull side of the tape.

2. After the first track has been recorded, a second recording can be made on the same tape by removing the reels from the recorder, turning them over, and placing on opposite spindles.

3. Thread the tape and proceed with the recording.

4. After the second track has been recorded, the first track is ready to be played, without rewinding, by changing reels as described in step No. 2.

Fast Forward

1. Any portion of a recording may be skipped, or any selection may be located in a few seconds by moving the high speed knob (11) to the right. A few seconds of "Fast Forward" is equivalent to several minutes of playing time.

2. By moving knob (11) back and forth the tape can be inched along to an exact point.

3. After reaching the desired portion of the tape, move the high speed knob (11) to the middle or neutral position to stop all tape movement.

NOTE: The fast forward or rewind mechanism can be engaged at any time while the recorder is in any function, and any previously depressed keys will automatically disengage.

DISASSEMBLY INSTRUCTIONS

To Remove Top Plate Assembly

1. Pull off "Volume" and "Tone" control knobs.
2. Remove screw at rear of high speed knob (11).
3. Remove five screws (8) from the top plate.
4. Turn until loose, 2 screws, one above the "Microphone Jack" and the other above the "Normal" indicator.
5. Remove reel spindles by removing their 3-screws.
6. Depress the record key and pry the record key lock to the left and remove top plate.

To Remove Mechanism From Amplifier

1. Unplug the play-record-erase head cable plug and motor plug. The motor plug is located on the bottom of the chassis near the solenoid.
2. Remove four screws, two on each perforated side plate and carefully lift out mechanism.

After servicing the unit, inspect visually for signs of damage and wear, and make certain all parts are in their proper place and properly adjusted. Re-assemble by reversing the procedure outlined above being careful that the motor and head leads will be clear of all moving parts.

PRELIMINARY TESTS — REPAIR PROCEDURE

TEST PROCEDURE: FAILURE TO PASS ANY OF THESE TESTS INDICATES A FAULT THAT SHOULD BE REMEDIED.

1. Remove front and rear plastic head covers by pulling up. Clean head, tape guides, and capstan with alcohol.

2. Press "Stop" key. Place high speed knob (11) in the middle or neutral position. Place on-off switch in the "On" position.

3. Thread tape on recorder. Brakes should be engaged. Pull required on reel should not distort the tape and should offer sufficient drag to prevent spilling of tape. Drop tape into threading slot. Attach free end of tape to take-up reel (right). Reel should rotate freely counter-clockwise and drag when rotated clockwise.

4. Press "Play" key, "Speaker" key should also depress and both should latch down. "Stop" key should release. Reel spindle brakes should release. Solenoid should energize. Felt pressure pads should press square against tape and cover shiny pole face area under tape. Pressure roller (44) should contact capstan, and tape should move past play-record-erase head (25) at playing speed. Take-up reel should wind up tape as it passes the capstan. The counter should tally each revolution of the supply reel.

5. Move high speed knob (11) to the right. Check to see that moving the knob releases "Play" and

"Speaker" keys and latches down "Stop" key. Pressure roller and pressure pads should be released. Tape should move forward at greatly increased speed.

6. Return high speed knob (11) to the middle or neutral position. Solenoid and pressure pads should remain disengaged. "Stop" key should remain down. There should be no spilling of tape. If tape spills, see "Stop Key Adjustment".

7. Move "Record Key Lock" to right. Press "Record" key. Make a microphone recording. Adjust "Volume" control while speaking so that "Normal" indicator flashes and "Distorted" indicator does not.

8. Press "Speaker" key. Speaker should be live. Press "Record" key again. "Speaker" key should release.

9. Move high speed knob (11) to the left. "Record" key should release.

10. Play back recording. Check volume, tone, and overall quality.

11. Rewind tape and re-record over your previous recording. All trace of previous recording should be erased on the portion of the tape re-recorded. Check irregularities in playing speed (Wow and Flutter). Check the action of the instant stop arm (36). Tape should stop instantly. Upon releasing, tape should start instantly and not spill off reels.

REVERSE
MODEL T11

FOLDER 8

MECHANICAL ADJUSTMENTS

Stop Key Adjustment

In switching from "Play" or "Record" to "Fast Forward" or "Rewind", if the solenoid does not release pressure roller (44), or if tape is spilled when returning to the neutral position from "Fast Forward" or "Rewind" by the solenoid re-engaging, check the stop key adjustment as follows:

1. Turn stop key adjusting screw (Item 55 Figure 2) a few turns counter-clockwise, then press "Play" key. Move high speed knob (11) to either "Fast Forward" or "Rewind". Turn the stop key adjusting screw (55) clockwise until the electrical function switch (saw-tooth latch bar) just latches to the right. Turn an additional 1/4 turn clockwise. If screw is turned too far clockwise the high speed knob (11) will bind.

2. Check "Stop" key micro-switch. Switch is located under the "Stop" key and is encased in fiber.

NOTE: It may be necessary to adjust "Stop" key when replacing amplifier assembly.

Replacing Sound Head

1. After removing head spring retainer (22) lift head and brass alignment plate from head shield cup. Unplug head cable plug.

2. Pry head from brass alignment plate. Note position of locating pins.

3. Place the head over the pins in the aligning plate in the proper location and press into place.

4. Replace alignment plate into head cup. The two brass pivot studs should engage the two holes in the plate. Replace head retaining spring.

5. Align head azimuth as described in electrical adjustments.

ELECTRICAL ADJUSTMENTS

Play-Record-Erase Head Azimuth Adjustment

It is very important that the head be lined up perfectly with the tape. If it is not, low output and loss of high frequencies will result. There is one adjustment to be made, which is as follows:

1. For alignment of the play-record-erase head a 1 mil alignment tape should be used. Thread tape on unit and set controls in "Play" position. Adjust head for maximum playback sensitivity by turning adjustment screw (Item 26 on Exploded View). In lieu of alignment tape, play a previously recorded tape and adjust head for maximum treble tone. After adjustment is made, cement alignment screw (26) to lock adjustment.

Bias Adjustment

The bias is measured by placing a 100 ohm resistor in series with the record element and measuring the voltage across this resistor with a meter capable of accurately reading 0.15 Volts at a frequency of 70KC. Adjustment is made by means of the screwdriver adjustment on oscillator coil (L2). This screw is located beneath the name plate on the rear panel. The above value of bias will produce optimum results on most types of standard tape presently available.

High Frequency Equalization Adjustment

Incorporated in the pre-amplifier circuit is a core tuned peaking coil (L1) that adjusts the high frequency

end point to compensate for long term head wear. This equalization is effective in play back only since headwear has a lesser effect on the recording process. The screwdriver adjustment is located on the chassis between the large electrolytic and the 12AX7 tube. Adjustment is made for flat recorded-played-back response from 10 to 16KC. Adjustment has been made at the factory for optimum performance and should not require any readjustment for at least 500 hours of use. Before adjustment is attempted, the head should be carefully cleaned with alcohol.

To make adjustment, record 10KC and 16KC signals. Upon playing back these signals, adjust the peaking coil core until the amplitude of the 16KC is equal to the 10KC. Measure the signals at the pre-amplifier output.

Hum Balancing Adjustments

Both record (R2) and playback (R3) hum balancing controls are provided to assure maximum signal to noise ratio. These controls have been factory adjusted for optimum performance. If adjustment is required, screwdriver controls are located on the chassis near the power transformer. First try reversing the power plug for minimum hum. Then with "Stop" and "Speaker" keys depressed, adjust record hum control (R2) for minimum hum at "Monitor Amp. Output", volume set at maximum. Next, press "Play" key and adjust the forward control (R3) for minimum hum at either the "Monitor" or "Pre-Amp. Output".

CLEANING

The majority of defects, other than wear or breakage, can be traced to dirty surfaces. The play-record-erase head (25), capstan, and pressure roller (44) are subject to an accumulation of tape coating residue, which is worn off the tape as it passes these parts.

This accumulation ~~should~~ be periodically removed since it will cause faint recording and poor playback. Wipe off the above surfaces carefully with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen cloth slightly with alcohol.

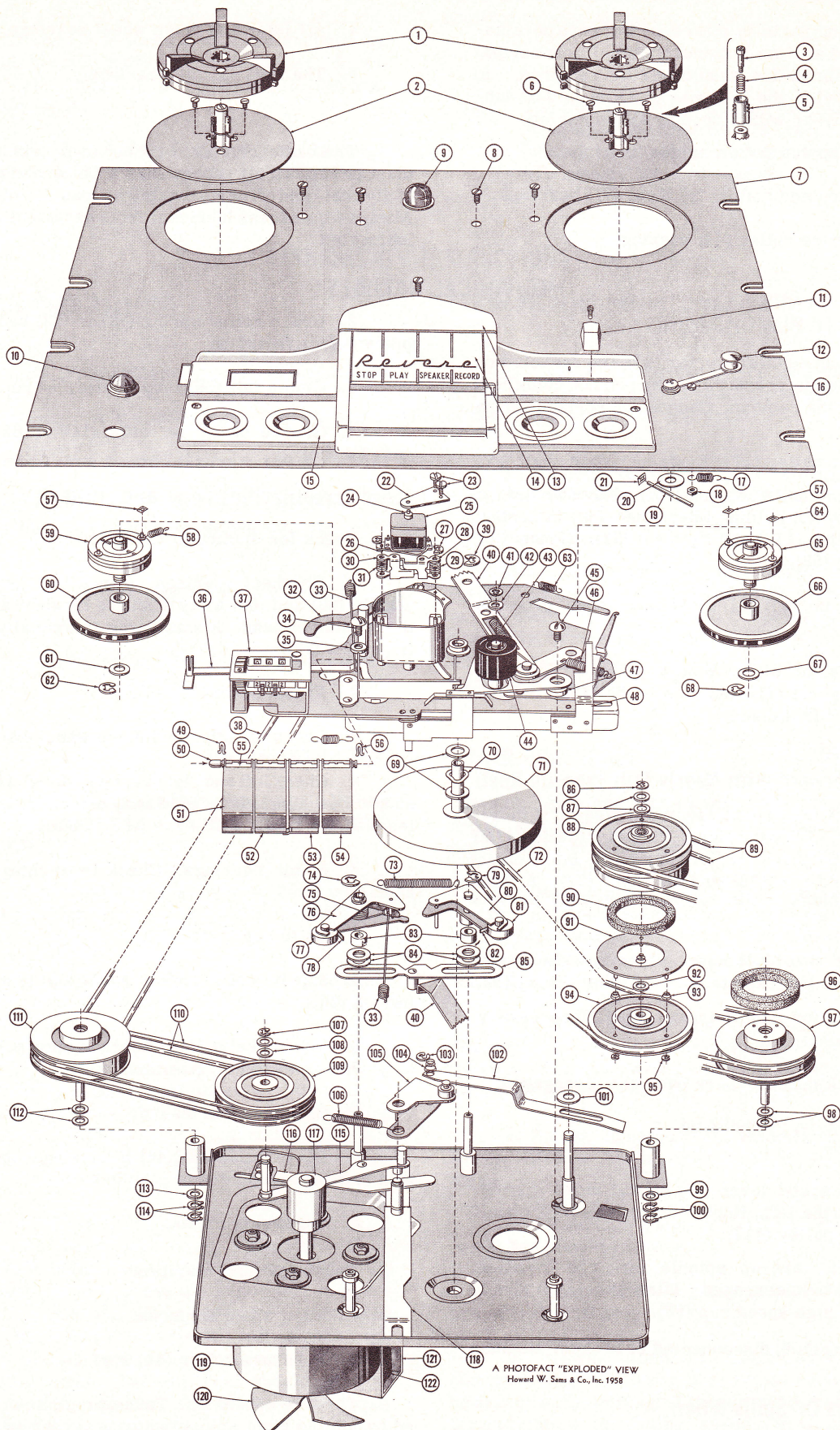


Figure 6. Exploded View Of Tape Transport Mechanism.

LUBRICATION

All moving parts in this recorder were permanently lubricated at time of manufacture. Under normal use further lubrication should not be required. In heavy-duty service, the following parts should be lubricated once a year with a drop of #10 motor oil:

1. The top and bottom motor bearings.
2. The top and bottom flywheel (71) bearings.
3. Pressure roller (44) bearing.

4. All idler and drive wheel bearings.
5. The reel spindle bearings.

The basic rule is — do not over lubricate. Oil must be kept off all rubber idlers, belts, and periphery of flywheel and off parts that might transfer oil to them. Always wipe excess lubricant from parts that have been lubricated.

MECHANICAL TROUBLES

No Tape Drive In Play Or Record

1. Pressure roller spring (43) disconnected or broken, resulting in pressure roller (44) not being held in contact with the capstan. Connect or replace spring (43).
2. Motor pulley (117) loose on motor shaft.
3. Idler tension spring (58) disconnected or broken, thereby not holding idler wheel (60) in contact with motor pulley (117) and flywheel (71). Connect or replace spring (58).
4. Take-up belt (72) stretched or not properly connected.
5. Check for oil on motor pulley (117), idler wheel (60), flywheel (71), and take-up belt (72). If necessary, clean with alcohol.

No Fast Forward

(Check Fast Forward With Nearly Full Take-up Reel)

1. Check high speed lever (48) to see if it moves approximately $7/8$ " to the right. This should allow idler wheel (66) to be pulled by its spring (63) into contact with high speed cup (88) and flywheel (71). A weak spring (63), binding slide, or bent arm may prevent this.
2. Idler wheel (60) must be free to slide. It may be necessary to increase tension on idler spring (58).
3. Check for oil on drive surfaces. If necessary, clean with alcohol.
4. Check that pressure pads are disengaged.

No Rewind, OK In "Play" And "Fast Forward"

1. High speed lever (48) should move approximately $7/8$ " to the left. Rubber drive belts (110) should contact motor pulley (117).
2. Check take-up spindle for free rotation. Brakes should be disengaged. Idler wheel (66) should not be driving high speed cup (88).
3. Spring (106) disconnected or broken. Replace spring (106).

Tape Overruns Or Spills When Changing Functions

1. Brake arm spring (73) disconnected or broken. Connect or replace spring (73).

2. Brake roller spring (78) or (82) broken. Replace defective spring.

3. Clutch felt (96) may be worn — replace.

4. Grease or oil on belts (110 or 89) — clean with alcohol.

Speed Irregularities (Wow and Flutter)

Check for binding in the following:

1. Flywheel bearings. Check by moving idler wheels (60) and (66) away from the flywheel and rotate the capstan by hand. A small drag is normally obtained from belt (72).

2. Pressure roller (44).

3. Check all idler and drive wheel bearings.

4. Check left and right reel spindles. The brakes should be disengaged or held away before turning spindles.

5. Motor bearings. Check by turning shaft by hand.

Check to see that:

1. Supply reel is free to rotate and is not scraping top plate.

2. Rubber belts (110) touch motor pulley (117) only when in "Rewind" position.

3. Brakes are released.

4. Pressure roller (44) is making good contact with capstan.

5. Capstan is clean.

Check for irregularities:

1. Idler wheel surfaces.

2. Pressure roller (44) surface.

4. Take-up tension. Take-up clutch can be checked by holding right spindle while recorder is in "Play" position. The tension should be smooth without any pulsations. If surface of take-up clutch felt (90) is gummy, it must be replaced.

NOTE: Oil on any of the foregoing drive surfaces will cause "Wow".

Insufficient Tape Take Up

1. Increase take up by adding another washer (101).
2. Clutch felt (90) may be worn — replace clutch felt.

FUNCTION SWITCH OPERATION

"Stop" Key (51) Pressed

Power to solenoid (122) interrupted, amplifier connected to input jack, and output transformer (T2) secondary disconnected.

Speaker Key (53) Pressed

Connects secondary of output transformer to Monitor Output Jack (M4) for public address in "Stop" position, or monitoring in "Record" position.

"Play" Key (52) Pressed

"Play-Record Coil" connected to first stage of

Tape Squeak

Tape squeak is caused by faulty tape with insufficient lubrication. Tape squeaking is accentuated by high temperature and humidity. Squeaking can be minimized by:

1. Cleaning head and pressure pads with alcohol.
2. Slightly decreasing pressure pad spring (29 or 31) tension.

amplifier input. "Speaker" key automatically actuated with "Play" key, tone control (R1B) operating.

"Record" (54) Key Pressed

"Play-Record Coil" connected to amplifier output, bias-erase oscillator circuit functioning, and tone control disconnected. If "Speaker" key is pressed, output is muted with 10 Ω resistor (R45). Record level indicators (M6) and (M7) operate in all functions. Monitoring of "Recording" may be accomplished by inserting 3-4 Ω speaker in Monitor Output Jack.

ELECTRICAL TROUBLES

Weak Playback Volume Or No High Frequencies

1. Check for dirty head (25). Clean head with alcohol. (The plastic headcover is removed by pressing below the word "Revere" and then prying up.)
2. Check pressure pads.
3. Wrong type of tape or wind. (Dull side of tape should be wound "in" — "A" wind.)
4. Check head azimuth adjustment (Page 8).
5. Head may be worn badly or need replacement.
6. Check adjustment and condition of (L1), if only pre-amp output is defective.

Recorder Dead, Pilot Light (M9) Off

1. Check fuse (M10). Cause of blown fuse may be shorted 6X5GT (V6) or unit plugged into D.C. or 220 VAC.
2. Check power cord and on-off-switch (M11).

Public Address Volume Weak, Distorted, Or Dead (Stop & Speaker Keys Depressed)

1. Try another microphone, radio, etc., to see whether the input source is defective. Plug a 3-4 Ω speaker in Monitor Output Jack.
2. Check all tubes and voltages indicated on schematic diagram.
3. Connect an audiogenerator to the grid of each stage to locate the area of fault.

Dead Playback, Appears To Operate Properly In Record, Level Indicators Operating

1. First half of 12AX7 (V1A) defective, (R11) open, or defective function switch contacts.
2. Check Monitor Output Jack. Check short in input grid shield wiring. Check for defective head.

Weak Or Distorted Record, Playback On Pre-Recorded Tape O.K.

1. Check bias-erase oscillator coil (L2) secondary for 80V @ 70KC.
2. Check input jack. Normal speech 1 ft. from microphone should flash the "Normal" indicator.
3. Check microphone or other input source. Microphone must have 3-circuit plug with shielded wire connected to ring, and shield to body; tip is not connected. One-volt input sources must have 2-circuit plug. Failure to push plug firmly all the way into jack will cause distortion.
4. Check bias-erase indicator lamp (M8). Lamp should light if oscillator is properly functioning.

Recording Level Indicators Inoperative, Records And Plays Properly

1. If indicators (M6) and (M7) are dead, lamps may be loose, or (C22), (C23), (R35) or (R37) open.
2. If lamp or lamps always glow, C22 and C23 may be shorted, R36 open, or amplifier may be oscillating.

Solenoid Does Not Actuate Pressure Roller (44) In "Play" Or "Record"

1. If using remote controls, check remote switch and cable connections.
2. Check on-off-switch (M11) and fuse (M10).
3. Check "Stop" key microswitch.
4. Check fiber arm on "Stop" key blade of push button switch.
5. Check mechanical linkage for binding.
6. Check solenoid.

Records-Background Hum, Hum Lower On Pre-Recorded Tape

1. Check all stages after the first and 6K6GT (V5) for cathode to heater leakage, also check (C1) and (C2).
2. Record from another microphone etc., to see whether hum comes from an outside source.
3. Adjust "Record Hum" control (R2) for minimum hum with "Stop" and "Speaker" keys down.

Hum In Playback, Falls Off With Decrease In Volume Control

1. Check first stage of 12AX7 (V1A). Adjust "Play Hum" control (R3) for minimum hum.

2. Move recorder away from hum fields such as fluorescent lamps, amplifiers, etc.

Microphonic Howl In "Play", But Dies Out When Volume Is Lowered

1. Try different 12AX7's in pre-amplifier stages.

No Erase, Records Over Previous Recordings

1. Check for dirt on erase head element and check pressure pads.
2. Check bias-erase oscillator coil (L2) secondary for 80V @ 70KC. Check 6K6GT (V5) bias oscillator.
3. Check erase coil for open or short.

FM, TV Or Amateur Interference

This is heard as a raspy unsteady buzz or cross modulation by voice or music. Add a 10K Ω 1/2 watt resistor in series with each grid of 12AX7 (V1), directly between tube socket grid terminals and other input components.

No Sound, Neon Lamps Flashing With Signal

1. Check speaker switch.
2. Check transformer (T2) secondary for open.
3. Check connecting cables, jacks, plugs, etc.

AUXILIARY PARTS LIST

A173-5	Microphone Plug
A196-10	Hi-Fi Connecting Cable
A196-8	Attachment Cord Assembly
B195-4	Power Cord Assembly

TRA-1102	Accessory Adapter Cord
A195-3	Hand Switch Cord
TR-2601	Replacement Pressure Pads

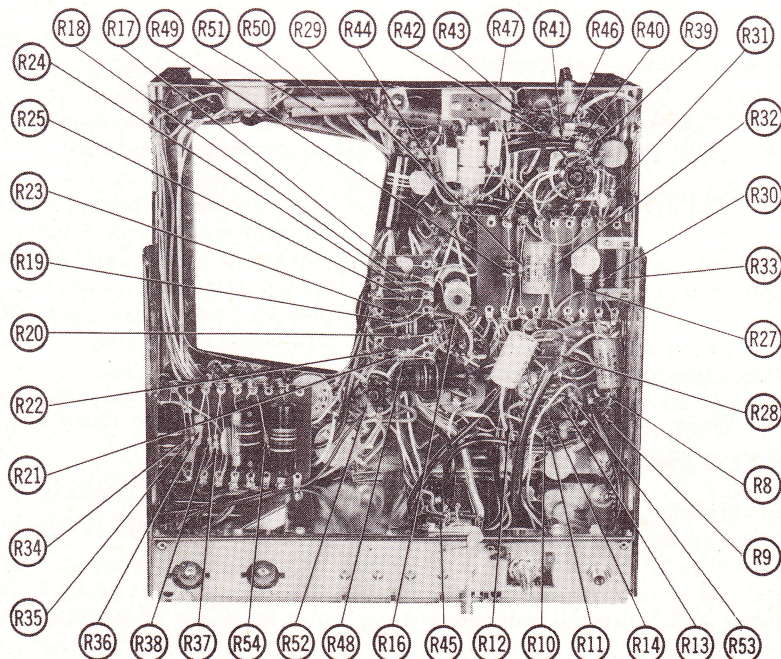


Figure 7. Bottom View Of Amplifier.

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
V1	BI20-3	12AX7, Pre-Amplifier
V2	BI20-3	12AX7, AF Amplifier
V3	BI20-17	6AU6, AF Amplifier
V4	BI20-1	6V6GT, Audio Output
V5	BI20-5	6K6GT, Bias Oscillator
V6	BI20-2	6X5GT, Rectifier
C1A	A119-4	Cap., Elect., 30 Mfd. @ 450V.
B		Cap., Elect., 30 Mfd. @ 450V.
C		Cap., Elect., 35 Mfd. @ 400V.
D		Cap., Elect., 100 Mfd. @ 25V.
C2A	A119-1	Cap., Elect., 30 Mfd. @ 300V.
B		Cap., Elect., 15 Mfd. @ 350V.
C		Cap., Elect., 10 Mfd. @ 350V.
C3	A116-3	Cap., Elect., 100 Mfd. @ 6V.
C4	A116-3	Cap., Elect., 100 Mfd. @ 6V.
C5	A118-2	Cap., Elect., 5 Mfd. @ 300V.
C6	BI15-1	Cap., Molded Tub., .1 Mfd. @ 200V.
C7	BI12-6	Cap., Ceramic Tub., 680 Mmf.
C8	BI13-10	Cap., Ceramic Disc, 1500 Mmf.
C9	BI13-9	Cap., Ceramic Disc, 3300 Mmf.
C10	BI12-3	Cap., Ceramic Tub., 220 Mmf.
C11	BI14-11	Cap., Ceramic Disc, 50,000 Mmf.
C12	BI14-2	Cap., Ceramic Disc, 15,000 Mmf.
C13	BI12-7	Cap., Ceramic Disc, 750 Mmf.
C14	BI13-8	Cap., Ceramic Disc, 5000 Mmf.
C15	BI14-3	Cap., Molded Tub., .022 Mfd. @ 600V.
C16	BI15-2	Cap., Molded Tub., .1 Mfd. @ 600V.
C17	BI15-4	Cap., Molded Tub., .47 Mfd. @ 600V.
C18	BI13-8	Cap., Ceramic Disc, 5000 Mmf.
C19	BI13-4	Cap., Ceramic Disc, 3000 Mmf.
C20	BI14-2	Cap., Ceramic Disc, 15,000 Mmf.
C21	BI12-4	Cap., Ceramic Disc, 300 Mmf.
C22	BI15-3	Cap., Molded Tub., .22 Mfd. @ 400V.
C23	BI14-11	Cap., Ceramic Disc, 50,000 MMf.
C24	BI14-11	Cap., Ceramic Disc, 50,000 Mmf.
C25	BI12-5	Cap., Ceramic Tub., 470 Mmf.
C26	BI13-1	Cap., Ceramic Tub., 1000 Mmf.
C27	BI11-2	Cap., Ceramic Disc, 47 Mmf.
C28	BI14-1	Cap., Ceramic Disc, 10,000 Mmf.
C29	BI13-2	Cap., Mica, 2000 Mmf.
C30	BI13-2	Cap., Mica, 2000 Mmf.
C31	BI12-6	Cap., Ceramic Tub., 680 Mmf.
C32	BI15-1	Cap., Molded Tub., .1 Mfd. @ 200V.
C33	BI15-2	Cap., Molded Tub., .1 Mfd. @ 600V.
C34	BI13-8	Cap., Ceramic Disc, 5000 Mmf.
C35	BI15-3	Cap., Molded Tub., .22 Mfd. @ 400V.
C36	BI10-1	Cap., Ceramic Tub., .47 Mmf.
RIA	BI40-9	Volume Control, 2 Meg.
B		Tone Control, 2 Meg.
R2	A140-7	Record Hum Control, 100Ω
R3	A140-7	Play Hum Control, 100Ω
R4	BI05-1	Resistor, 1 Meg., 1/2 Watt
R5	BI03-5	Resistor, 18KΩ, 1/2 Watt
R6	BI05-1	Resistor, 1 Meg., 1/2 Watt
R7	BI03-5	Resistor, 18KΩ, 1/2 Watt

Ref. No.	Part No.	Description
R8	BI05-1	Resistor, 1 Meg., 1/2 Watt
R9	BI02-5	Resistor, 2700Ω, 1/2 Watt
R10	BI05-5	Resistor, 10 Meg., 1/2 Watt
R11	BI04-8	Resistor, 470KΩ, 1/2 Watt
R12	BI04-11	Resistor, 560KΩ, 1/2 Watt
R13	BI04-11	Resistor, 560KΩ, 1/2 Watt
R14	BI04-6	Resistor, 220KΩ, 1 Watt
R15	BI03-15	Resistor, 82KΩ, 1/2 Watt
R16	BI05-1	Resistor, 1 Meg., 1/2 Watt
R17	BI02-1	Resistor, 1000Ω, 1/2 Watt
R18	BI03-4	Resistor, 15KΩ, 1/2 Watt
R19	BI03-14	Resistor, 33KΩ, 1/2 Watt
R20	BI03-4	Resistor, 15KΩ, 1/2 Watt
R21	BI03-15	Resistor, 82KΩ, 1/2 Watt
R22	BI03-7	Resistor, 22KΩ, 1/2 Watt
R23	BI05-1	Resistor, 1 Meg., 1/2 Watt
R24	BI03-14	Resistor, 33KΩ, 1/2 Watt
R25	BI02-1	Resistor, 1000Ω, 1/2 Watt
R26	BI04-14	Resistor, 100KΩ, 1/2 Watt
R27	BI04-18	Resistor, 100KΩ, 1 Watt
R28	BI01-8	Resistor, 390Ω, 1/2 Watt
R29	BI04-15	Resistor, 200KΩ, 1/2 Watt
R30	BI04-16	Resistor, 270KΩ, 1/2 Watt
R31	BI04-17	Resistor, 180KΩ, 1/2 Watt
R32	BI04-8	Resistor, 470KΩ, 1/2 Watt
R33	A106-8	Resistor, 330Ω, 3 Watt
R34	BI04-11	Resistor, 560KΩ, 1/2 Watt
R35	BI04-14	Resistor, 100KΩ, 1/2 Watt
R36	BI04-18	Resistor, 100KΩ, 1 Watt
R37	BI04-14	Resistor, 100KΩ, 1/2 Watt
R38	BI04-5	Resistor, 220KΩ, 1/2 Watt
R39	BI05-3	Resistor, 4.7 Meg., 1/2 Watt
R40	BI04-16	Resistor, 270KΩ, 1/2 Watt
R41	BI04-7	Resistor, 390KΩ, 1/2 Watt
R42	BI04-4	Resistor, 150KΩ, 1/2 Watt
R43	BI04-14	Resistor, 100KΩ, 1/2 Watt
R44	BI03-1	Resistor, 10KΩ, 1/2 Watt
R45	BI00-2	Resistor, 10Ω, 1 Watt
R46	BI00-4	Resistor, 47Ω, 1 Watt
R47	BI04-5	Resistor, 220KΩ, 1/2 Watt
R48	BI03-9	Resistor, 47KΩ, 1/2 Watt
R49	BI03-3	Resistor, 10KΩ, 2 Watt
R50	A106-9	Resistor, 650Ω, 5 Watt
R51	A106-9	Resistor, 650Ω, 5 Watt
R52	BI00-1	Resistor, 4.7Ω, 1/2 Watt W.W.
R53	BI00-1	Resistor, 4.7Ω, 1/2 Watt W.W.
R54	BI02-3	Resistor, 1200Ω, 1/2 Watt
T1	BI30-3	Power Transformer, 115 Volts
T2	A131-4	Output Transformer
L1	A-133-5	High Freq. Equalization Adj. Coil
L2	A-132-2	Oscillator Coil
M1	A173-5	Mike, Radio, Phono Input Jack
M2	A174-5	Tuner, Phono Input Jack
M3	BI41-3	Function Switch
M4	A174-14	Monitor Amp. Output Jack
M5	A174-14	Pre-Amp. Output Jack
M6	A121-2	Normal Indicator, Neon #NE-45
M7	A121-2	Distort Indicator, Neon #NE-45
M8	A121-4	Record Bias Ind., Neon #NE-51
M9	A121-1	Pilot Light, Type #47
M10	A176-3	Fuse, 2 Amp. Slo-Blo
M11	A141-13	On-Off Switch

REVERSE
MODEL T11

FOLDER 8

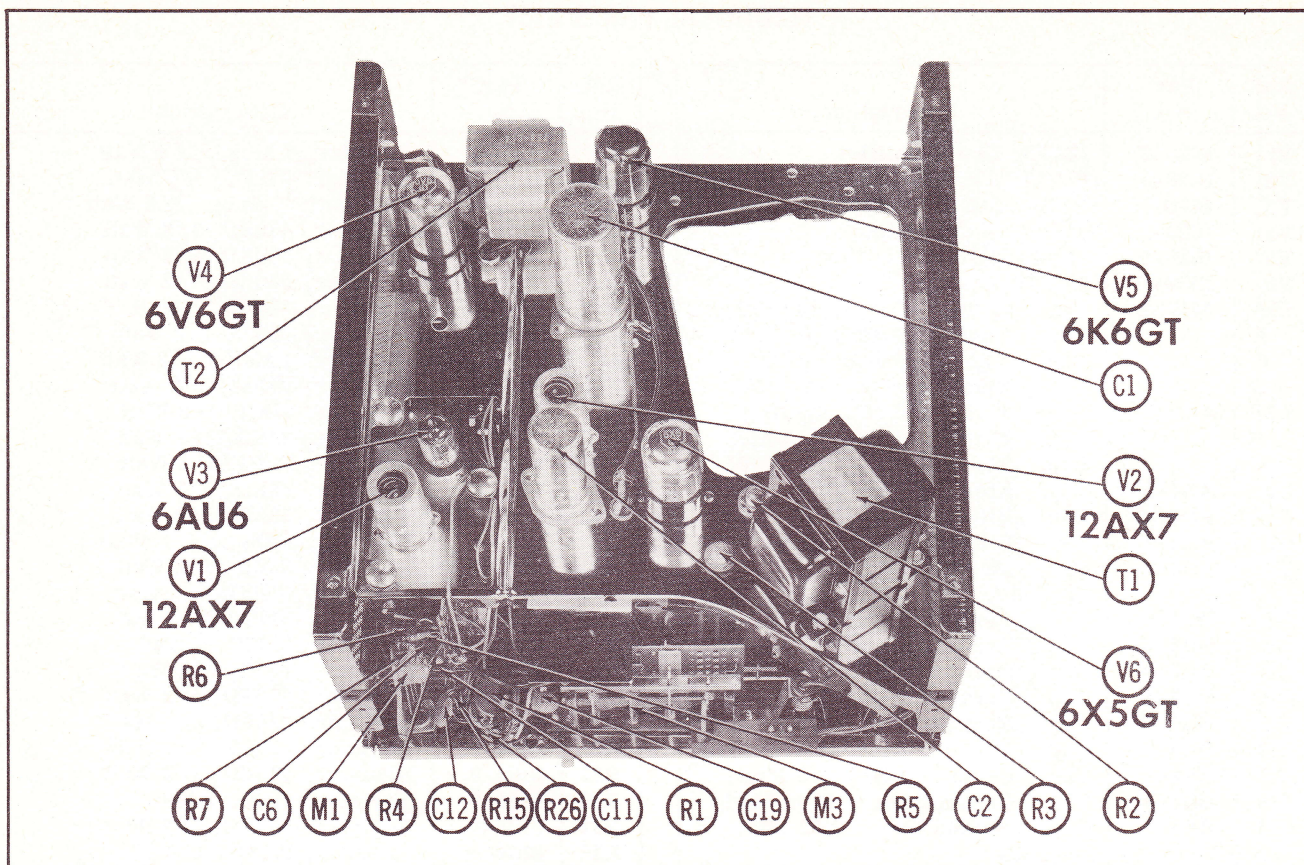


Figure 8. Top View Of Amplifier Showing Resistor Locations.

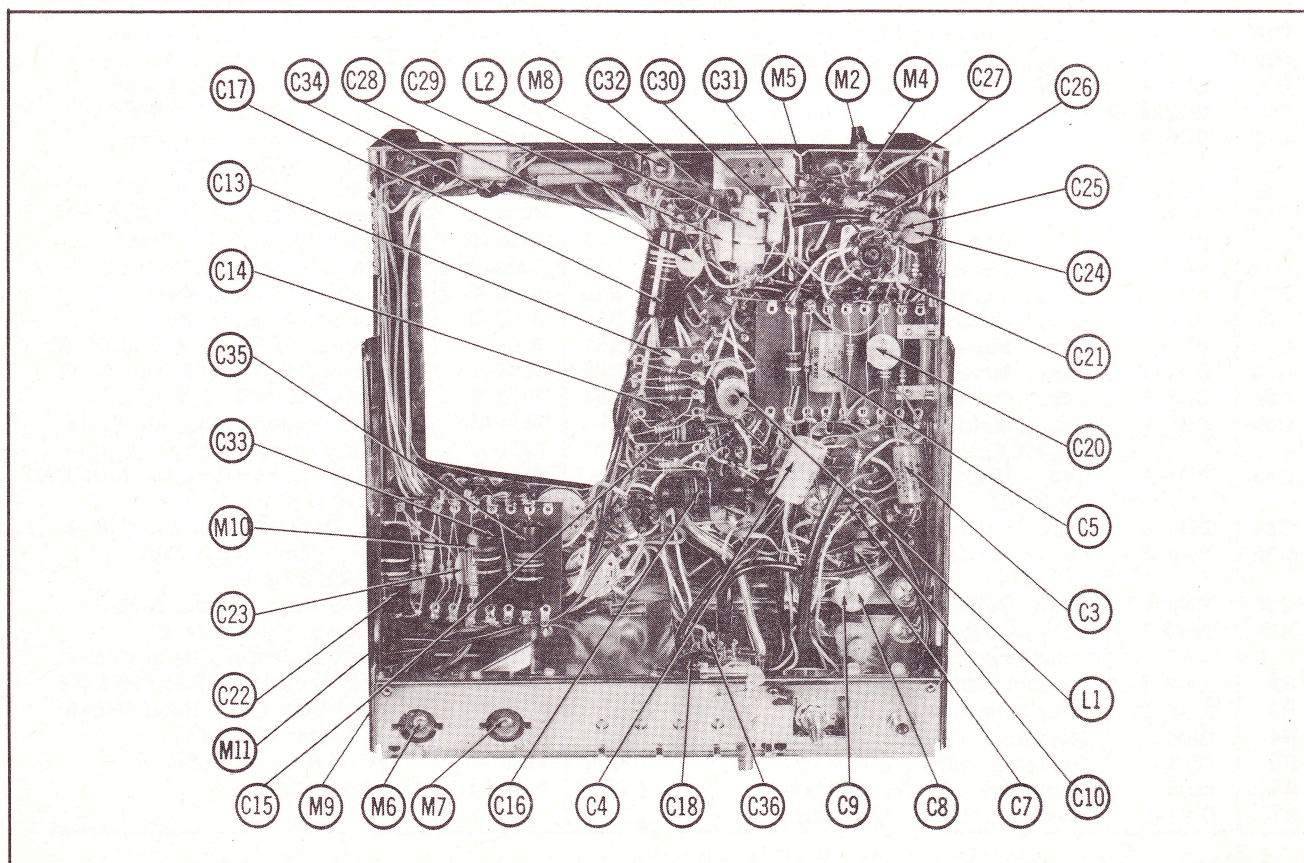
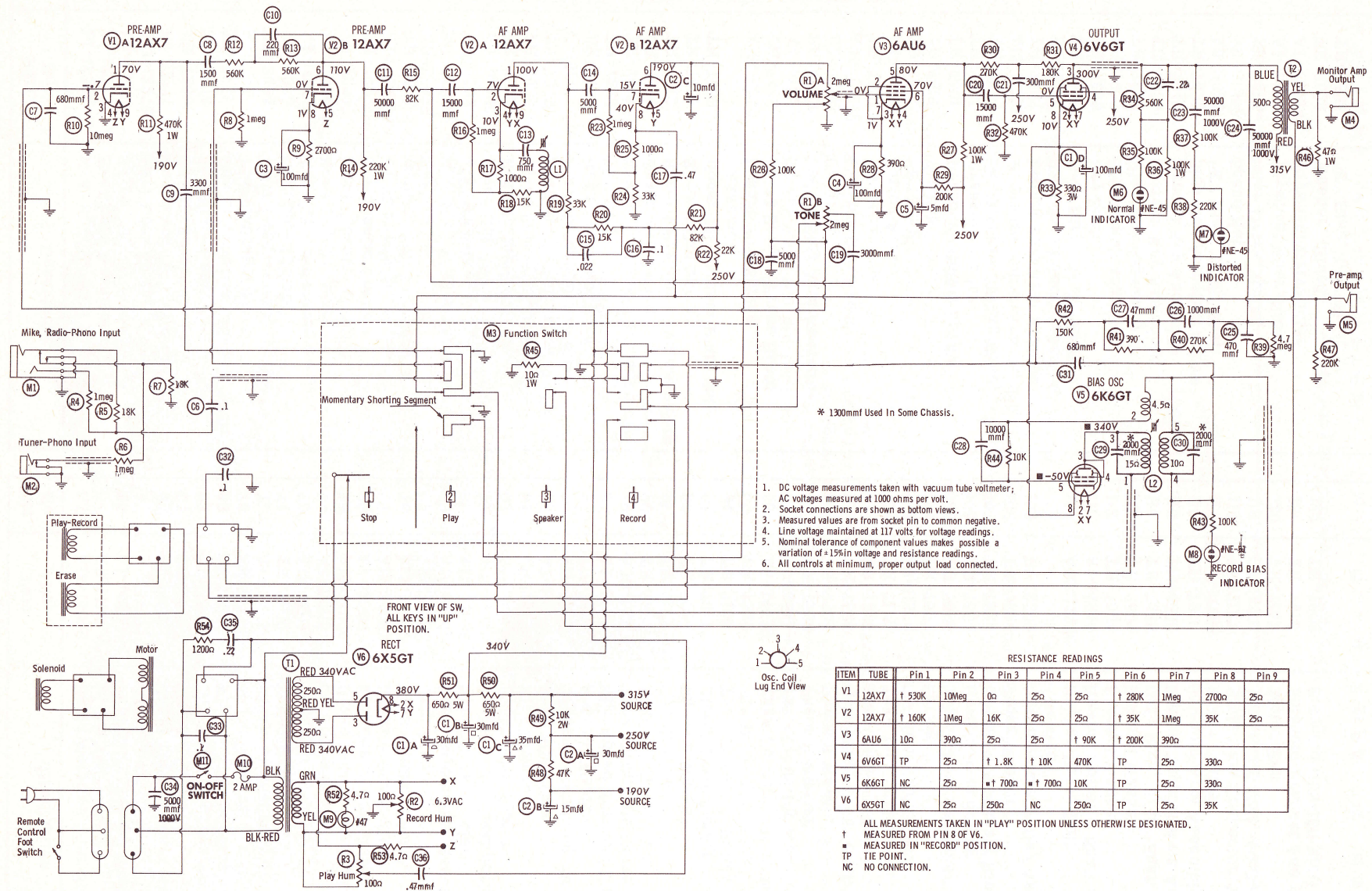


Figure 9. Top View Of Amplifier Showing Capacitors, Coils, & Miscellaneous Parts.



A PHOTOFAC STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

386-8

Figure 10. Schematic Diagram.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	BI-12306	N. A. R. T. B. Reel Hub Adaptor
2	A1-12295	Reel Lock Assembly
3	A4-12267	Screw
4	A13-12272	Reel Lock Spring
5	A4-12271	Reel Lock
6	TR-7260	Spindle Screw
7	R1-14078	Top Plate Assembly
8	TR-7251	Pan Head Screw, #6-32 x 7/32
9	A-187-9	Bias Indicator Jewel
10	TR-2694	Pilot Lamp Jewel
11	TR-7006	High Speed Knob
12	A3-14069	Tape Tension Arm
13	A15-14008	Head Cover, Rear
14	TR-7002	Head Cleaning Cover
15	TR-7001	Top Plastic Cover
16	A14-12636	#6-32 Screw
17	TR-7622	Spring
18	A9-12637	Hex. Nut
19	A9-12103	Roll Pin, 3/32 x 1 3/8"
20	TR-7502	Flat Washer
21	A9-10960	Speed Nut
22	TR-7150	Head Spring Retainer
23	TR-7425	#4-40 Screw (Bind. Head)
24	TR-7249	Head Spring Insulating Stud
25	C-161-1	Play-Record-Erase Head
26	TR-7429	Head Alignment Screw
27	TR-7520	"E" Ring
28	TR-7916	Erase Pressure Pad Assembly
29	TR-7615	Erase Pad Spring
30	TR-7915	Record Pressure Pad Assembly
31	TR-7610	Record Pad Spring
32	TR-7909	Upper Mechanism Plate Sub-Assembly
33	A13-14090	Instant Stop Spring
34	TR-7445	#8-32 Screw (Truss Head)
35	A4-11229	Spacer
36	BI-14533	Instant Stop Arm Assembly
37	C9-14084	Counter
38	A30-14542	Counter Drive Belt
39	TR-7523	"E" Ring
40	A3-14575	Spring Arm
41	TR-7521	"E" Ring
42	TR-7517	Washer
43	TR-7601	Pressure Roller Spring
44	TR-7921	Pressure Roller
45	TR-7445	#8-32 Screw (Truss Head)
46	A13-11203	Pressure Roller Arm Spring
47	TR-7267	Instant Stop Arm Bushing
48	BI-14527	High Speed Slide Assembly
49	TR-7526	Grip Ring, 3/16" Shaft
50	TR-7239	Key Shaft
51	TR-7937	Stop Key Assembly
52	TR-7938	Play Key Assembly
53	TR-7939	Speaker Key Assembly
54	TR-7940	Record Key Assembly
55	TR-7420	Stop Key Adjusting Screw
56	A9-11888	"E" Ring, 3/16" Shaft
57	A9-10960	Speed Nut
58	TR-7605	Idler Drive Spring
59	A1-14510	Flywheel Idler Slide
60	A1-12424	Flywheel Drive Idler
61	TR-2629	Washer, Blued
62	TR-7524	"E" Ring, 1/4" Shaft

Ref. No.	Part No.	Description
63	A13-14048	Rapid Forward Idler Spring
64	A9-14141	Speed Nut
65	A1-14511	Idler Slide Group, Rapid Forward
66	A1-14521	Rapid Forward Idler Assy.
67	TR-2629	Washer, Blued
68	TR-7524	"E" Ring, 1/4" Shaft
69	A8-14004	Flywheel Thrust Washer
70	A8-14025	Spring Washer
71	A1-12423	Flywheel Assembly
72	TR-7809	Take-Up Belt
73	A13-14111	Brake Arm Spring
74	A9-12315	Grip Ring
75	A13-14076	Brake Hold Lever Spring
76	A1-14095	Left Brake Arm Assembly
77	A15-14089	Nylon Brake Roller
78	A13-14077	Brake Roller Leaf Spring
79	A9-12315	Grip Ring
80	A1-14046	Right Brake Arm Assembly
81	A15-14089	Nylon Brake Roller
82	A13-14077	Brake Roller Leaf Spring
83	A4-14074	Brake Arm Spacer
84	TR-7513	Flat Washer
85	A3-14134	Rear Slide Cam
86	TR-7522	Crescent Retaining Ring
87	TR-7504	Pheonol Washer
88	A1-14516	High Speed Forward Cup Ass'y.
89	A30-12270	Take Up Spindle Drive Belt
90	TR-7817	Take Up Clutch Felt
91	TR-7110	Clutch Plate
92	TR-7504	Pheonol Washer
93	TR-7617	Clutch Plate Spring
94	TR-7109	Take Up Clutch Pulley
95	TR-7520	"E" Ring, 1/8" Shaft
96	A9-14539	Take Up Pulley Felt Washer
97	A1-14541	Take Up Pulley & Shaft Ass'y.
98	TR-7504	Pheonol Washer
99	TR-7504	Pheonol Washer
100	TR-7526	Grip Ring, 3/16" Shaft
101	TR-7514	Flat Washer, Steel
102	TR-7115	Take Up Clutch Lever
103	A9-11888	"E" Ring, 3/16" Shaft
104	TR-7607	Spring
105	TR-7912	Toggle Arm Assembly
106	TR-7604	Rewind Arm Spring
107	TR-7522	Crescent Retaining Ring
108	TR-7504	Fiber Washer
109	BI-12299	Intermediate Pulley Ass'y.
110	A30-12270	Rubber Drive Belt
111	A1-14548	Rewind Pulley & Shaft Ass'y.
112	TR-7504	Pheonol Washer
113	TR-7504	Pheonol Washer
114	TR-7526	Grip Ring, 3/16" Shaft
115	BI-14530	Rewind Support Arm Ass'y.
116	TR-7911	Solenoid Arm Assembly
117	A4-12286	Motor Pulley
118	TR-7127	Slide Cam Connector Arm
119	C9-14071	Motor, 115 Volt, 60 Cycle
120	TR-7157	Motor Fan
121	TR-7910	Solenoid Bracket Ass'y.
122	TR-7803	Solenoid (105-120 Volt)